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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,991	02/22/2002	Deborah V. Hirst	50953	9977
21874	7590	04/20/2006		
EDWARDS & ANGELL, LLP P.O. BOX 55874 BOSTON, MA 02205			EXAMINER METZMAIER, DANIEL S	
			ART UNIT	PAPER NUMBER

1712

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/080,991

**Applicant(s)**

HIRST ET AL.

**Examiner**

Daniel S. Metzmaier

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 30-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 30-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Claims 30-32 are pending.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 30 and 32 are rejected under 35 U.S.C. 103(a) as obvious over Japan Synthetic Rubber Co Ltd., JP-61275352, as evidenced by Derwent Abstract, AN 1987-017861. The Derwent Abstract (abstract) sets forth a solvent mixture for a polyamide reaction comprising 5-95% wt pts of lactone and 5-95% wt pts of an amide. The lactone is  $\gamma$ -caprolactone among others. The Derwent Abstract specifically mentions gamma-caprolactone and an amide. The Derwent Abstract specifically mentions N,N-dimethylacetoamide and N-2-pyrrolidone and therefore reads on the claim.

Derwent Abstract, AN 1987-017861, differs from the claims in the use of  $\gamma$ -caprolactone rather than  $\epsilon$ -caprolactone.

Applicants disclose  $\gamma$ -caprolactone and  $\epsilon$ -caprolactone as suitable lactones, page 8 and table. The lactones are related as structural isomers. Both lactones are known solvents and would have been expected to have similar solvent properties. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ the related  $\epsilon$ -caprolactone for the  $\gamma$ -caprolactone employed in the Derwent abstract solvent compositions with a reasonable expectation of similar properties.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to vary the concentrations and/or the particular species within the limited number of solvent species disclosed in the Derwent Abstract for their advantageous solvent properties as a reaction media and solvent system for polyamide resins.

4. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carano et al, US 5,985,040, in view Matson et al, US 4,824,443. Carano et al (Table B, columns 7 and 8) disclose the combination of butyrolactone (10-40% bv<sup>1</sup>) and N-methyl-2-pyrrolidone (90-60% bv). The claimed concentrations of 20% to 80% bv clearly read on the reference 10%-40% bv. Carano et al (abstract) discloses the compositions are useful in softening and removal of epoxy, polyimide, cyanate ester resins.

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<sup>1</sup> The term "bv" denotes "by volume".

Carano et al differs from the claim compositions in the disclosed use of  $\gamma$ -butyrolactone rather than  $\epsilon$ -caprolactone.

Matson et al (column 3, lines 26 et seq) discloses solvents, which swell polymers including lactams comprising pyrrolidone solvents and (column 4, lines 21-27) lactones including  $\gamma$ -butyrolactone and  $\epsilon$ -caprolactone.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ the structurally related  $\epsilon$ -caprolactone for the  $\gamma$ -butyrolactone employed in the Carano et al reference. The  $\gamma$ -butyrolactone differs only from of  $\epsilon$ -caprolactone in that  $\epsilon$ -caprolactone has structural isomerization. Based on the structural similarity, the solvent compounds would have reasonably been expected behaves the same or substantially the same. Said compositions would have been expected to behave similarly.

To the extent Carano et al differs from claim 29, Carano et al (abstract; column 2, lines 60-61; column 3, line 21; column 4, line 8; and claims 1, 10, 19, and 24) discloses the use of N-(2-hydroxyethyl)-2-pyrrolidone as a functional equivalent to the  $\gamma$ -butyrolactone. The Carano et al reference (at least the abstract and claims) clearly contemplates mixtures of solvents selected from the group including N-(2-hydroxyethyl)-2-pyrrolidone and  $\gamma$ -butyrolactone. Matson et al (column 4, lines 21-27) discloses solvent lactones including  $\gamma$ -butyrolactone or  $\epsilon$ -caprolactone. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ N-(2-hydroxyethyl)-2-pyrrolidone and  $\epsilon$ -caprolactone as a solvent combination in the

solvent swell compositions of Carano et al as clearly suggested by Carano et al and Matson et al for their advantageous swelling properties.

Furthermore, Carano et al (column 1, lines 51 et seq) discloses smear removal solvents including propylene glycol ethers are known in the art for smear removal. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to further employ art known solvents for the advantage of smear removal in the desmear compositions disclosed in the Carano et al reference.

### ***Response to Arguments***

5. Applicant's arguments filed February 6, 2006 have been fully considered but they are not persuasive.

6. Applicants (page 4) assert the Derwent Abstract '861 lacks a disclosure of epsilon-caprolactone and discloses instead of the  $\gamma$ -caprolactone. This has not been deemed persuasive based on obviousness as a point of law. Structurally related compounds and/or structural isomers would have been expected to have similar properties. See MPEP 2144.08(II)(A)(d) and in re Dillon, 919 F.2d at 697, 16 USPQ2d at 1905.

Furthermore, applicants (page 8, first full paragraph; and paragraph bridging pages 9 and 10; of the instant specification) disclose the  $\gamma$ -caprolactone as a preferred suitable lactone solvent for the instant invention.

7. Applicants (page 4) assert the Derwent abstract does not teach the advantages of the instant combination. Derwent '861 teaches solvent compositions for polyamide compositions. Derwent '861 is generic to lactones and the use of the related structural

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isomer expected to have similar properties would have been obvious to one having ordinary skill in the art at the time of the invention as a polyamide solvent taught in Derwent '861.

8. Applicants (pages 4 and 5) assert unexpected results from the use of epsilon-caprolactone rather than the  $\gamma$ -butyrolactone. The  $\gamma$ -butyrolactone is employed in the Carano et al reference. This has not been deemed persuasive for the following reasons: (1) Applicants do not define the properties and/or results in the claims, which are argued to impart patentability to the solvent compositions. The use of  $\gamma$ -butyrolactone is disclosed in the reference and is disclosed by applicants (page 8, first full paragraph; and paragraph bridging pages 9 and 10; of the instant specification, Table) as suitable lactone solvents.

(2) While some variation between different related materials would be expected, applicants have not seasonably presented why any alleged difference between the particular species would have been unexpected. The burden of proving unexpected results rests on those, which assert them. In proving such results, it is not enough merely to show that certain results are obtained. For the results to be probative of nonobviousness, the results must be shown to have been unexpected to the skilled worker in the art. Moreover, it is self evident that evidence presented to rebut a *prima facie* case of obviousness must be commensurate in scope with the claims that the evidence is offered to support. To establish nonobviousness, differences must be statistically significant, unexpected and of practical significance.

(3) Lastly, the alleged patentable distinction between the two lactones originally disclosed as solvent swell compositions and the results in support thereof must have been recognized at the time of applicants' invention. Several lactones are disclosed and  $\epsilon$ -caprolactone and  $\gamma$ -caprolactone are disclosed as preferred. Applicants' asserted patentable distinction does not appear in the application as originally filed.

9. Applicants (page 5) assert the Carano et al reference, alone or in combination with Matson et al, are limited only to  $\gamma$ -butyrolactone formulations and Matson et al lacks a teaching of the concentrations claimed. This has not been deemed persuasive for the reasons set forth above regarding the Derwent Abstract. Applicants' claims do not require the alleged texturing results and the prior art discloses the compositions swell.

Furthermore, applicants' data for run # 30, 50 %bv  $\epsilon$ -caprolactone and 40% NMP does not appear to show a significant difference for the texturing. Also, Carano et al (column 3, lines 49 et seq) disclose best results for compositions having about 70 to 90 % bv of NMP and about 30 to 10 % bv lactone as  $\gamma$ -butyrolactone. Applicants data does not show examples having 70-90 % bv NMP with a lactone, which the claims read. Since the solvents are known for the swelling function claimed, a *prima facie* case of obviousness having been presented, some variation in properties of the compositions would have been expected and would be determined by routine experimentation of one having ordinary skill in the art, and applicants have not shown unexpected results for the claims combinations; the obviousness rejections are maintained.



***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**Daniel S. Metzmaier**  
**Primary Examiner**  
**Art Unit 1712**

DSM